

In the Claims:

1. (Previously Presented) A battery pack, comprising:
a case containing a plurality of cells,
at least one air passage formed within the case for allowing cooling air outside the case to enter the case and to pass at least one of along and between the cells, and exit from the case, and
at least one radiator provided in the at least one air passage so as to be in contact with an outer surface of the cells, wherein the heat capacity of the at least one radiator increases in the downstream direction of a flow of the cooling air.
2. (Original) A battery pack in accordance with claim 1, wherein said increase in the heat capacity is achieved by increasing at least one of the surface area and the volume of the at least one radiator.
3. (Original) A battery pack in accordance with claim 1, wherein each radiator has a cross section, transverse to the direction of the flow of the cooling air, that progressively increases in size along said direction of the flow.
4. (Previously Presented) A battery pack in accordance with claim 1, wherein each radiator is contoured to conform to the outer surfaces of the cells.
5. (Original) A battery pack in accordance with claim 1, wherein each radiator is a generally rectangular plate having an inner surface contoured to conform to the outer surfaces of the cells and an outer surface opposite the inner surface, the outer surface of each plate having a plurality of radiator fins thereon protruding into the respective air passage.
6. (Previously Presented) A battery pack in accordance with claim 5, wherein the radiator fins of each plate include a plurality of horizontal fins with different lengths, the fins being arranged in parallel both with respect to any of the other fins in the plate and to the direction of the cooling airflow such that the heat capacity of each radiator increases in the downstream direction of the cooling air.

7. (Previously Presented) A battery pack in accordance with claim 5 , wherein the number of fins of each radiator plate increases in the downstream direction of the cooling airflow.

8. (Previously Presented) A battery pack, comprising:

a first case containing a plurality of cells,

a second case enclosing the first case,

at least one air passage formed within the first case for allowing cooling air outside the first case to enter the first case at an upstream portion of the at least one air passage and to pass at least one of along and between the cells, and exit from the first case at a downstream portion of the at least one air passage, and

radiator means provided in the at least one air passage so as to be in contact with an outer surface of each of the cells, the radiator means having a plurality of portions each corresponding to each of the cells, wherein the portions have different heat capacities according to a heat load of the corresponding cell.

9. (Original) A battery pack in accordance with claim 8, wherein the heat capacity of each portion of the radiator means is determined by the area of contact of the portion with the corresponding cell.

10. (Previously Presented) A battery pack in accordance with claim 8, wherein the heat capacity of each said portion of the radiator means is determined by the thickness of the portion.

11. (Previously Presented) A battery pack in accordance with claim 8, wherein the heat capacity of each said portion of the radiator means is determined by the material of the portion.

12. (Previously Presented) A battery pack in accordance with claim 8, wherein the heat capacity of each said portion of the radiator means is determined by any combination of the area of contact of the portion with the corresponding cell, the thickness of the portion, and the material of the portion.

13. (Currently Amended) A battery pack in accordance with claim 8, wherein the cells are divided into at least one first cell group and at least one second cell group, each of said first and second cell groups including at least one cell ~~and having a heat load distinct from the others~~, and the radiator means includes a plurality of radiator plates having different heat capacities, each radiator plate being in contact with one of the first and second cell groups.

14. (Previously Presented) A battery pack in accordance with claim 13, wherein the battery pack comprises one first cell group located generally in the center thereof and two second cell groups opposing the first cell group along branches of the at least one air passage.

15. (Previously Presented) A battery pack in accordance with claim 14, wherein the radiator plates include a first radiator plate and two second radiator plates, the first radiator plate surrounding the first cell group at its outer periphery and each of the second radiator plates abuts inner surfaces of one of the second cell groups, and wherein the first radiator plate has a smaller heat capacity than each of the second radiator plates.

16. (Original) A battery pack in accordance with claim 15, wherein the first radiator plate is made of a synthetic resin and each second radiator plate is made of at least one metal selected from a group consisting of aluminum, copper and iron.

17. (Original) A battery pack in accordance with claim 15, wherein the portions of the second radiator plate become thicker in a stepwise manner along the downstream direction of a flow of the cooling air.

18. (Previously Presented) A battery pack in accordance with claim 15, wherein the first radiator plate and the second radiator plates have a plurality of portions adapted to correspond to locations of different cells in the battery pack and adapted to remove heat from the corresponding cells at each portion, said portions having different heat capacities according to the heat loads of the corresponding cells.

19. (Original) A battery pack in accordance with claim 18, wherein the heat capacity of each portion of each second radiator plate is determined by the area of contact of the portion with the corresponding cell.
20. (Original) A battery pack in accordance with claim 18, wherein the heat capacity of each portion of the first and second radiator plates is determined by the thickness of the portion.
21. (Original) A battery pack in accordance with claim 15, wherein the heat capacity of each portion of each second radiator plate is determined by any combination of the area of contact of the portion with the corresponding cell and the thickness of the portion.
22. (Original) A battery pack in accordance with claim 14, wherein the second cell groups are symmetrical and include an equal number of cells and the first cell group includes fewer cells than each of the second cell groups.
23. (Previously Presented) A battery pack in accordance with claim 14, wherein each second cell group has inner surfaces in contact with one of the second radiator plates, and each second cell group is arranged in a single row of cells bent at one intermediate cell toward the inner surface, the portion of each second radiator plate corresponding to the intermediate cell includes two bulges adjacent to the intermediate cell so that the intermediate cell interposes therebetween.
24. (Previously Presented) A battery pack in accordance with claim 23, wherein each bulge is thicker than the remainder of the second radiator plate.
25. (Currently Amended) A battery pack, comprising:
a case containing a plurality of cells, the cells ~~are being~~ being divided into at least one first cell group and at least one second cell group, each of said ~~first and second~~ cell groups including at least one cell ~~and having a heat load distinct from the other cells~~, and the at least one first cell group is located generally in the center of the battery pack,

at least one air passage formed within the case for allowing cooling air outside the case to enter the case at an upstream portion of the at least one air passage and to pass at least one of along and between the cells, and exit from the case at a downstream portion of the at least one air passage, and wherein at least two of the second cell groups oppose the at least one first cell group along branches of the at least one air passage, and

radiator means provided in the at least one air passage so as to be in contact with an outer surface of each of the cells, the radiator means having a plurality of portions each corresponding to each of the cells to form a plurality of radiator plates having different heat capacities, each radiator plate being in contact with one of the at least one first cell group and one of the at least second cell groups, wherein the portions have different heat capacities according to a heat load of the corresponding cell, wherein the heat capacity of each portion of the radiator means is determined by the area of contact of the portion with the corresponding cell.

26. (Previously Presented) A battery pack in accordance with claim 25, wherein the heat capacity of each portion of the radiator means is further determined by the thickness of the portion.

27. (Previously Presented) A battery pack in accordance with claim 25, wherein the heat capacity of each said portion of the radiator means is further determined by the material of the portion.

28. (Previously Presented) A battery pack in accordance with claim 25, wherein the heat capacity of each said portion of the radiator means is further determined by any combination of the area of contact of the portion with the corresponding cell, the thickness of the portion, and the material of the portion.

Claims 29 -30 (cancelled)

31. (Previously Presented) A battery pack in accordance with claim 25, wherein the radiator plates include a first radiator plate and two second radiator plates, the first radiator plate

surrounding the first cell group at its outer periphery and each of the second radiator plates abuts inner surfaces of one of the second cell groups, and wherein the first radiator plate has a smaller heat capacity than each of the second radiator plates.

32. (Previously Presented) A battery pack in accordance with claim 31, wherein the first radiator plate is made of a synthetic resin and each second radiator plate is made of at least one metal selected from a group consisting of aluminum, copper, and iron.

33. (Previously Presented) A battery pack in accordance with claim 31, wherein the portions of the second radiator plate become thicker in a stepwise manner along the downstream direction of a flow of the cooling air.

34. (Previously Presented) A battery pack in accordance with claim 31, wherein the first radiator plate and the second radiator plates have a plurality of portions adapted to correspond to locations of different cells in the battery pack and adapted to remove heat from the corresponding cells at each portion, said portions having different heat capacities according to the heat loads of the corresponding cells.

35. (Previously Presented) A battery pack in accordance with claim 34, wherein the heat capacity of each portion of the first and second radiator plates is determined by the area of contact of the portion with the corresponding cell.

36. (Previously Presented) A battery pack in accordance with claim 34, wherein the heat capacity of each portion of the first and second radiator plates is determined by the thickness of the portion.

37. (Previously Presented) A battery pack in accordance with claim 31, wherein the heat capacity of each portion of each second radiator plate is determined by any combination of the area of contact of the portion with the corresponding cell and the thickness of the portion.

38. (Previously Presented) A battery pack in accordance with claim 25, wherein the second cell groups are symmetrical and include an equal number of cells and the first cell group includes fewer cells than each of the second cell groups.

39. (Previously Presented) A battery pack in accordance with claim 25, wherein each second cell group has inner surfaces in contact with one of the second radiator plates, and each second cell group is arranged in a single row of cells bent at one intermediate cell toward the inner surface, the portion of each second radiator plate corresponding to the intermediate cell includes two bulges adjacent to the intermediate cell so that the intermediate cell interposes therebetween.

40. (Previously Presented) A battery pack in accordance with claim 39, wherein each bulge is thicker than the remainder of the second radiator plate.

Claims 41-72 (cancelled).